UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/712,216	11/13/2003	Peter N. Gray	BTEC 9693	8452

321 7590 10/15/2007

SENNIGER POWERS
ONE METROPOLITAN SQUARE
16TH FLOOR
ST LOUIS, MO 63102

EXAMINER	
ZACHARIA, RAMSEY E	
ART UNIT	**PAPER NUMBER**
1794	

NOTIFICATION DATE	DELIVERY MODE
10/15/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

uspatents@senniger.com

Office Action Summary	Application No.	Applicant(s)	
	10/712,216	GRAY ET AL.	
	Examiner	Art Unit	
	Ramsey Zacharia	1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *01 August 2007*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-80* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-80* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Claim Rejections - 35 USC § 103

2. Claims 1, 2, 4, 6-13, 23, 24, 26, 27, 29-36, 46, 47, 49, 50, and 52-59 are rejected under 35 U.S.C. 103(a) as being unpatentable over Opperman et al. (ZA 9602517 A).

Opperman et al. teach a gas generating device comprising a monolithic body having particulates dispersed in a plastic matrix. The particles may be sodium metabisulphite to generate SO_2. The plastic may be polyvinyl chloride or polyethylene (page 7, paragraph 3). In the embodiment of Example 1, the device comprises 38 wt% polyvinyl chloride and 33 wt% sodium metabisulphite (page 10).

Regarding claims 10, 11, 33, 34, 56, 57, polyethylene has a melt index of between about 0.5 and about 8.0 and melt temperature of between about 105 and about 150 °C. Melt flow is reported as between 0.22 (which reads on the lower limit of about 0.5) and 6.5 and the melting point is reported as between 108-121 °C.

Opperman et al. do not teach that their device has a thickness of between about 5-500 μm. However, Opperman et al. do teach that the thickness of the device is a results effective variable that influences the SO_2 release rate, with thicker devices exhibiting slower and more prolonged release rate since moisture takes a longer time to reach the particles as they are further removed from the exposed surface (page 8, paragraph 3). As such, it would have been obvious

to one having ordinary skill in the art at the time the invention was made to decrease the thickness of the device for applications in which a faster release rate is desired at longer times, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2nd 272, 205 USPQ 215 (CCPA 1980).

3. Claims 14-22, 37-47, 49, 50, and 52-68 rejected under 35 U.S.C. 103(a) as being unpatentable over Sanderson et al. (WO 03/018431 A1).

Sanderson et al. teach a sulfur dioxide gas generating device using in the packaging industry (page 1, lines 9-21). The device has a layer comprising a gas generating compound dispersed in a polymer matrix between a carrier sheet and cover sheet (page 3, lines 27-34). The polymer matrix may be polyethylene (page 6, lines 11-15). In one embodiment the device contains 0.1-0.3 kg of sodium metabisulphite per kg of polymer (page 8, lines 25-28).

Regarding claims 56 and 57, polyethylene has a melt index of between about 0.5 and about 8.0 and melt temperature of between about 105 and about 150 °C. Melt flow is reported as between 0.22 (which reads on the lower limit of about 0.5) and 6.5 and the melting point is reported as between 108-121 °C.

Sanderson et al. are silent as to the thickness of the matrix layer in their device. However, Sanderson et al. do teach that the exact configuration of the matrix layer will depend on requirements, such as the targeted shelf or storage life, the nature of the fruit, and the cost allowed for the gas generating device (page 8, lines 4-9). That is, Sanderson et al. teach that the configuration of the matrix layer is a results effective variable and, as such, it would have been obvious to one having ordinary skill in the art at the time the invention was made to optimize the

configuration, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2nd 272, 205 USPQ 215 (CCPA 1980) and MPEP 2144.05.

Regarding claims 15, 20, 21, 38, 43, 44, 61, 66, and 67, the carrier and/or cover sheets meet the limitations of these claims since they would be expected to release gas (at least through decomposition) upon exposure to a sufficiently high amount of electromagnetic energy, such as UV radiation, particularly since Sanderson et al. teach the use of plastics as the carrier and cover sheets (see page 6, line 11-page 7, line 7) and plastics are known to undergo chain scission upon exposure to sufficiently high levels of UV radiation.

4. Claims 3, 5, 25, 28, 48, and 51 are rejected under 35 U.S.C. 103(a) as being unpatentable over Opperman et al. (ZA 9602517 A) in view of Aamodt et al. (U.S. Patent 6,325,969).

Opperman et al. teach all the limitations of claims 3, 5, 25, 28, 48, and 51, as outlined above, except for the presence of a second compound that generates chlorine dioxide.

Aamodt et al. teach that chlorine dioxide gas is useful for killing biological contaminants, such as fungi (column 2, lines 37-41). The chlorine dioxide may be formed from a composition which absorbs water from the air and releases chlorine dioxide over time (column 2, lines 42-49).

One skilled in the art would be motivated to use a combination of the gas generating solids of Opperman et al. and Aamodt et al. in the device of Opperman et al. because both produce gases upon exposure to water that act as fungicides. It has been held that it is *prima facie* obvious to combine two compositions each of which is taught by the prior art to be useful

for the same purpose, in order to form a third composition to be used for the very same purpose. The idea of combining them flows logically from their having been individually taught in the prior art. See MPEP 2144.06.

Response to Arguments

5. Applicant's arguments filed 01 August 2007 have been fully considered but they are not persuasive.

The applicants argue that Opperman et al. teach only sheets that are cast-formed as opposed to the present specification that describes non-casting methods such as extrusion.

This is not persuasive because: (a) the claims are not restricted film formed by non-casting methods, and (b) the determination of patentability for a product is based on the product itself and not on the method of production (see MPEP 2113).

The applicants argue that, in view of Opperman et al., it is surprising and unexpected that gas generating articles having a thickness of about 5-500 μm can be prepared based on the methodology and composition used by Opperman et al.

This is not persuasive because the arguments to be based on speculation. Casting methods have been used to form layers having thicknesses less than 1 mm and there is nothing demonstrating that the composition of Opperman et al. would not have the requisite strength for an article having a thickness of 5-500 μm. It is noted that the "high solids loading" of Opperman et al. (10-50% by mass - page 3, paragraph 6) falls within the particle loading range of 0.1-70% by weight recited in the instant claims.

The applicants argue that it is surprising and unexpected that the thin films of the present invention provide superior prolonged gas release rates as compared to the thicker and more highly loaded Opperman et al. devices. Examples 4 and 5 of Opperman et al. show that the release rate for devices having a 1 mm thickness and 33% gas releasing solids loading drops to below about 20 ppm after about 7 days and is about 15 ppm at 17 days. This is contrasted with the applicants' film, having a thickness of about 50-90 μm and a loading of about 20%, which results in a gas release rate of about 25 ppm at 7 days and about 125 ppm at 17 days. The applicants further submit that the data of Opperman et al. and the accelerated test conditions of the present invention yield comparable results. The applicants state that accelerated testing methodology is well known and accepted.

This is not persuasive for the following reasons. First, the claims as written are not commensurate in scope with the showing presented in the specification (see MPEP 716.02(d)). Examples 2-5 are directed to films having thicknesses in the range of 25-180 μm (compared with a claimed range of about 5-500 μm), containing 12-37 wt% of sodium metabisulfite (compared with 0.1-70.0 wt% of a gas generating solid) and 63-88 wt% of LDPE (compared with 30.0-99.9 wt% of a polymer).

Second, no meaningful comparison can be made between the results reported in Opperman et al. and those reported in the instant specification because, since there are multiple parameters that differ between Opperman et al. and the instant results (e.g. thickness, solids loading, test conditions) it is not possible to assign significance to any one variable. For example, the difference in prolonged gas release rates may be a result of thickness, loading, or the test conditions.

It is additionally noted that the examiner's concern regarding the accelerated testing is not that such tests are unreliable or meaningless. Rather, the concern is that a precise comparison cannot be made between the conventional results reported in Opperman et al. and accelerated results of the instant specification. This is supported by the applicants' own specification which indicates that 1 hour at evaluation conditions approximates 0.6-0.9 days of exposure under commercial storage and transport conditions. That is, by the applicants' own admission, 1 hour of accelerated testing might correspond anywhere from 0.6 days to 0.9 days of exposure under commercial storage and transport conditions. In addition, the specification does not appear to define the "commercial storage and transport" conditions as used in the context of the disclosed accelerated tests. Thus, it is impossible to compare the results of Opperman et al. with the results of the accelerated tests reported in the instant specification.

Finally, the results do not appear to be unexpected. Opperman et al. teach that the gas release rate of thicker films at longer times will be slower since moisture takes a longer time to reach the particles as they are further removed from the exposed surface. Therefore, rather than being surprising, a showing that a thinner film has a fast release of gas at longer times when compared to a thicker film would be expected.

Regarding the rejection over Sanderson et al. the applicants argue that, since dependent claims are, by definition narrower in scope than the claims from which they depend, claims 14-22 and 37-45 are patentable over Sanderson et al. since independent claims 1, 23, and 46 are not rejection over Sanderson et al.

This is not persuasive because dependent claims 14-22 and 37-45 do ***not*** contain all the limitations of the independent claims from which they depend. Claims 1 and 23 are directed to

monolayer articles, i.e. articles having only a single layer. This limitation is not in claims 14-22 and 37-45. It is noted that the rejection over Sanderson et al. has now been expanded to include claims 46, 47, 49, 50, and 52-59 which are directed to an article as opposed to a monolayer article.

Conclusion

6. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ramsey Zacharia whose telephone number is (571) 272-1518. The examiner can normally be reached on Monday through Friday from 9 to 5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Carol Chaney, can be reached at (571) 272-1284. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Ramsey Zacharia
Primary Examiner
Tech Center 1700